In the Claims

1. (Previously presented) A defective recombinant adenovirus that is incapable of autonomously replicating, said defective recombinant adenovirus comprising at least one DNA sequence encoding the specific iodine transporter (Na^+/I^- Symporter) NIS, wherein said DNA sequence is placed under the control of a transcriptional promoter allowing its expression in tumor cells.

2. (Previously presented) The defective recombinant adenovirus of Claim 1, wherein the DNA sequence is a cDNA sequence.

3. (Previously presented) The defective recombinant adenovirus of Claim 1, wherein the DNA sequence is a gDNA sequence.

4. (Previously presented) The defective recombinant adenovirus of Claim 1, wherein the DNA sequence encodes the specific murine iodine transporter (Na^+/I^- Symporter) NIS.

5. (Previously presented) The defective recombinant adenovirus of Claim 1, wherein the DNA sequence encodes the specific human iodine transporter (Na^+/I^- Symporter) NIS.

6. (Canceled)

7. (Previously presented) The defective recombinant adenovirus of Claim 1, wherein the transcriptional promoter is a viral promoter.

8. (Previously presented) A defective recombinant adenovirus that is incapable of autonomously replicating, said defective recombinant adenovirus comprising a cDNA sequence encoding the human iodine transporter NIS under the control of the CMV promoter.

9. (Previously presented) A defective recombinant adenovirus that is incapable of autonomously replicating, said defective recombinant adenovirus comprising a DNA sequence encoding the iodine transporter NIS under the control of a promoter allowing predominant expression in tumor cells.

10. (Previously presented) The defective recombinant adenovirus of Claim 9, wherein the promoter is selected from the group consisting of the regulatory sequence of the elastase I gene, the regulatory sequence of the insulin gene, the regulatory sequence of the gene for immunoglobulins, the regulatory gene of the mouse mammary tumor virus, the regulatory sequence of the PSA gene, the regulatory sequence of the alpha-fetoprotein gene, the regulatory sequence of the alpha 1-antitrypsin gene, the regulatory sequence of the β-globin gene, the regulatory sequence of the gene for basic myelin, the regulatory sequence of the gene for the myosin light chain 2, and the regulatory sequence of the gene for the gonadotrophin-releasing hormone.

11. (Previously presented) The defective recombinant adenovirus of Claim 1, further comprising a deletion of all or part of an E1 region, a deletion of all or part of an E4 region, or a deletion of all or part of the E1 region and a deletion of all or part of the E4 region.

12. (Canceled)

13. (Previously presented) The defective recombinant adenovirus of Claim 1, wherein said adenovirus is a human adenovirus type Ad 2 or Ad 5 or a canine adenovirus type CAV-2.

14. (Previously presented) The defective recombinant adenovirus of Claim 1, further comprising at least one gene encoding a polypeptide involved in a peroxidase system.

15. (Previously presented) A pharmaceutical composition comprising said defective recombinant adenovirus of Claim 1 and a physiologically acceptable vehicle.

16. (Canceled)

17. (Previously presented) The pharmaceutical composition of Claim 15, in injectable form.

18. (Previously presented) The pharmaceutical composition of Claim 15, comprising between 10^4 and 10^{14} pfu/ml defective recombinant adenoviruses, inclusive.

19. (Previously presented) The defective recombinant adenovirus of Claim 7, wherein the viral promoter is selected from the group consisting of E1A, MLP, CMV, RSV-LTR, MT-1, and SV40.

20. (Previously presented) The defective recombinant adenovirus of Claim 14, wherein said gene encoding a polypeptide involved in a peroxidase system comprises the gene for glucose oxidase or the gene for thyroperoxidase.

21. (Previously presented) The pharmaceutical composition of Claim 18, comprising between 10^6 to 10^{11} pfu/ml defective recombinant adenoviruses, inclusive.

22. (Previously presented) The defective recombinant promoter of Claim 4, further comprising a deletion of all or part of an E1 region, a deletion of all or part of an E4 region, or a deletion of all or part of the E1 region and a deletion of all or part of the E4 region.

23. (Previously presented) The defective recombinant promoter of Claim 4, further comprising a gene encoding a polypeptide involved in the peroxidase system.

24. (Previously presented) The defective recombinant promoter of Claim 5, further comprising a deletion of all or part of an E1 region, a deletion of all or part of an E4 region, or a deletion of all or part of the E1 region and a deletion of all or part of the E4 region.

25. (Previously presented) The defective recombinant virus of Claim 5, further comprising further comprising a gene encoding a polypeptide involved in the peroxidase system.

26. (Previously presented) The defective recombinant adenovirus of Claim 8, further comprising a deletion of all or part of an E1 region, a deletion of all or part of an E4 region, or a deletion of all or part of the E1 region and a deletion of all or part of the E4 region.

27. (Previously presented) The defective recombinant adenovirus of Claim 8, further comprising at least one gene encoding a polypeptide involved in a peroxidase system.

28. (Previously presented) The defective recombinant adenovirus of Claim 9, further comprising a deletion of all or part of an E1 region, a deletion of all or part of an E4 region, or a deletion of all or part of the E1 region and a deletion of all or part of the E4 region.

29. (Previously presented) The defective recombinant adenovirus of Claim 9, further comprising at least one gene encoding a polypeptide involved in a peroxidase system.

30. (Previously presented) A defective recombinant adenovirus that is incapable of autonomously replicating, said defective recombinant adenovirus comprising a DNA sequence that encodes a specific murine iodine transporter (Na^+/I^- Symporter) NIS or a specific human iodine murine iodine transporter (Na^+/I^- Symporter) NIS, wherein said DNA sequence is placed under the control of a transcription promoter allowing its expression in tumor cells.

31. (Previously presented) The defective recombinant adenovirus of Claim 30, wherein said defective recombinant adenovirus comprises a deletion of all or a part of an E1 region, a deletion of all or part of an E4 region, or a deletion of all or part of the E1 region and a deletion of all or part of the E4 region.

32. (Previously presented) The defective recombinant adenovirus of Claim 31, wherein said defective recombinant adenovirus comprises a gene that encodes a polypeptide involved in the peroxidase system.

33-38. (Canceled)